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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,972	02/15/2001	Mary Chan-Park	26822-0006	5444

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,972

Applicant(s)

CHAN-PARK ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 53-67 and 69-104 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 53-67 and 69-93 is/are rejected.
- 7) ☒ Claim(s) 94-104 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/26/04, 12/8/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 53-54, 59-66, and 88, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,018,383 (Dunn et al) in view of U. S. Patent No. 6,537,459 (Dufresne et al).

Dunn, in the abstract, in col 5, line 42-67, in col 6, lines 1-15, in col 7, lines 12-26, in col 8, lines 48-67, and in col 9, lines 1-9, discloses a process for patterning structures on electronic modules (displays) comprising providing a support web (flexible material substrate, flat panel display) with a layer of photosensitive material on the substrate (dielectric material) continuously, providing a mask with a mask pattern, wherein the mask is a continuous strip (loop) (with patterns of transparent portions and opaque portions) that is selectively illuminated (selectively exposed) to form a corresponding structure (form an exact pattern of the mask) of the mask pattern onto the substrate in a continuous manner, aligning the mask strip with the flexible substrate (reference 34) such that a portion of the mask is parallel to a portion of the substrate (see figure 1) in the same direction, and rolling the flexible mask in synchronized motion (relatively or with same velocity) with the flexible substrate (see figure 2). Dunn, in col 6, lines 1-20, and lines 56-67, and in col 7, lines 1-11, discloses the mask is rolled such that a portion

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of the mask and a portion of the substrate are substantially parallel, and rolling in the same velocity (a common drive motor assembly for the mask and the substrate) and in the same direction (see figures 1, and 2) (claims 53-54, 59-66, and 88).

The difference between the claims and Dunn is that Dunn does not disclose that the photosensitive material is a radiation curable material, wherein the unexposed radiation curable material is removed .

Dufresne, in col 1, lines 12-20, and in col 5, lines 45-60, discloses that the resist material on the flexible cylindrical element (flexible substrate, polymeric substrate with dielectric coating) is a photosensitive material that is either a positive resist or a negative resist. Dufresne, in col 8, lines 30-34, discloses that it is preferable to use the negative resist.

Therefore, it would be obvious to a skilled artisan to modify Dunn by employing the negative resist suggested by Dufresne as the radiation curable material because Dufresne, in col 11, lines 34-36, and in col 12, lines 53-57, and in col 17, lines 30-50, discloses the surface of the photosensitive coated substrate as the photoresist coated substrate, wherein the exposed negative resist is hardened (unexposed portion removed during development) upon exposure, and the imaging process performed provides negative images of the desired microcircuitry.

3. Claims 55-58, 67, and 69-93, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,018,383 (Dunn et al) in view of U. S. Patent No.

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6,537,459 (Dufresne et al) as applied to claims 53-54, 59-66, and 88, and further in view of U. S. Patent Application Publication No. 2002/0029969 (Yager et al).

Dunn in view of Dufresne is discussed in paragraph no. 3.

The difference between the claims and Dunn in view of Dufresne is that Dunn in view of Dufresne does not disclose steps (a), (b), (c), (d), and (e) of claim 55, claims 67-87, and claims 89-93. Dunn does not disclose that the substrate comprises an indium-tin oxide on polythene terphthalate or polycarbonate.

Yager, in the abstract, in [0013], in [0025], [0026], [0027], in [0029], and in [0039], [0040] and in figures 1B, and 2B, discloses that the support web (movable separation matrix on a solid support, polymeric substrate) comprises a plurality of conductor lines (wires, ITO), and that the radiation sensitive composition is radiation curable material such as positive photoresists are coated over the conductor lines, and the structures are disposed as an array of microcups (reference 2, with microcup walls) with a top opening for a display device. Yager, in [0038], in [0040], [0041], [0042], and [0043] discloses that the mask pattern corresponds to the matrix formed in the substrate and the image of the microcups is projected to the resist coated substrate (resist coated extended series of micro-electrodes) through radiation, one subset of microcups at a time, wherein the positive resist is selectively exposed and cured, and developed, and the uncured portions are removed (stripped) to form the channels in the matrix (reference 2). Yager, in [0047] discloses that the substrate is patterned to form a plurality of arrays of microcups, by patterning each chip at a time (to form first, second, third etc subsets of microcups). Yager, in [0030], [0032], [0033], [0034], [0035], [0047], discloses that the

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microelectrodes formed are filled with gel matrix (electrophoretic display pigments), and are then closed with a top laminate (protective sheet). Yager, in [0029], in [0038], [0039], and [0040], discloses that the conductor lines (wires) are transparent to visible light.

Therefore, it would be obvious to a skilled artisan to modify Dunn in view of Dufresne by employing the method of using the moveable extended series of micro-electrodes on the support web of Yager in the photolithographic tool of Dunn and Dufresne because Dunn, in col 4, lines 36-62, in col 7, lines 12-26, in col 8, lines 64-67, in col 9, lines 1-9, discloses that rolling a flexible substrate in synchronous motion with the photomask with simultaneous deposition of the resist on the substrate, followed by exposure results in increased throughput with almost any desired resolution, the provision of exposing a helical substrate in one continuous helical scan, and significantly lowering the cost per exposure of the electronic module (display devices).

Allowable Subject Matter

4. Claims 94-104, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments, see response, filed April 26, 2004, with respect to the rejection(s) of claim(s) 53-54, and 59-66, and 88 under 35 USC 102 (e) (Dunn et al)

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have been fully considered and are persuasive. Therefore, the 102 (e) rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of claims 53-54, 59-66, and 88 (see paragraph no. 2).

A) Applicants argue that Dunn et al., does not disclose the coating of a radiation curable material on the support web, and that Dunn et al., does not disclose the removal of unexposed radiation curable material.

Although, Dunn does not disclose that the photosensitive material is radiation curable, Dunn teaches that the pattern is imprinted onto the photosensitive layer by illuminating the mask pattern. Additionally, Dufresne is depended upon to provide the disclosure that the photosensitive material can be used as a radiation curable material. Furthermore, Dufresne refers to the photoresist coated substrate as the photosensitive material coated substrate, and that the coated photoresist material is preferably a negative resist (radiation curable, unexposed portions removed). See paragraph no. 2.

B) Applicants argue that Dunn et al., does not disclose preparation of well-defined structures.

Dunn, in col 1, lines 5-10, teaches the formation of patterns (well-defined structures) on flexible substrates.

C) Applicants argue that Dunn et al., fails to disclose direct radiation.

See paragraph no. 4.

D) Applicants argue that neither Dunn et al., nor Yager et al., discloses a multi-color display wherein the re-opened subsets of microcups are filled with electrophoretic display pigments.

Dunn teaches the formation of display panels and electronic modules. Yager is depended upon to provide the teaching of refilling the microelectrodes with electrophoretic pigments (multi-colored).

E) Applicants argue that neither Dunn et al., nor Yager et al., teaches the use of a substrate that comprises ITO on PET or polycarbonate or polythene terphthalate.

Yager et al., is depended upon to provide such disclosure. Yager, in [0031], and [0032], discloses that the substrate comprises organic polymeric material with ITO (indium-tin oxide) microelectrodes on its surface (see figure 2A).


Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

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applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd


June 3, 2004.



JOHN A. MCPHERSON
PRIMARY EXAMINER